

What is claimed is:

1. A friction reducing ship that reduces frictional resistance by ejecting gas bubbles on a submerged surface of a ship body, wherein the gas bubbles are generated as a result of the ship body cruising through a body of water to create in the water a negative pressure region having a pressure lower than a pressure in a gaseous space and directing a gas from the gaseous space to the negative pressure region in the water.
2. A method for reducing frictional resistance of a ship body by ejecting gas bubbles on a submerged surface of the ship body by creating in the water a negative pressure region, having a pressure lower than a pressure in a gaseous space, resulting from the ship body cruising through a body of the water, and directing a gas from the gaseous space to the negative pressure region in the water.
3. A friction reducing ship, that reduces frictional resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising a bubble generation apparatus for generating micro-bubbles by creating a negative pressure state in a portion of water admitted from a water intake opening provided below a waterline in a bow section of the ship body so as to eject atmospheric air into the water and discharging the micro-bubbles together with the water to a water discharge opening provided in a bottom section of the ship.
4. A friction reducing ship, that reduces frictional resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:
 - a water transport passage provided on an external hull plate so as to extend from a water intake opening provided below a waterline in a bow section of the ship body to a water discharge opening provided in a bottom section of the ship body, and having an air discharge opening disposed partway along the passage;
 - an air transport passage extending from above the water to the air discharge

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opening; and

a gas ejection member protruding toward an inner side of the water transport passage and provided in such a way to cover the air discharge opening having a gas ejection opening; wherein

the air discharge opening is situated in a location such that a hydrostatic pressure at the air discharge opening is negative with respect to an atmospheric pressure existing above the water.

5. A friction reducing ship according to one of claim 3 or 4, wherein the water discharge opening in the bottom section is located in a widthwise center in the vicinity of the bow section of the ship body.

6. A method for reducing frictional resistance of a ship body by creating a negative pressure state in a portion of water admitted from a water intake opening provided in a bow section of the ship body below a waterline so as to generate micro-bubbles by ejecting atmospheric air into the water and discharging the micro-bubbles together with the water to a water discharge opening provided in a bottom section of the ship body.

7. A method according to claim 6, wherein the water discharge opening in the bottom section is located in a widthwise center in the vicinity of the bow section of the ship body.

8. A method for reducing frictional resistance of a ship by ejecting gas bubbles on a submerged surface of a ship body by creating in the water a negative pressure region, having a pressure lower than a pressure in a gaseous space, resulting from the ship body cruising through a body of water, and directing a gas from the gaseous space to the negative pressure region in the water and forming a flow of water having locally severe vortices.

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9. A friction reducing ship, that reduces frictional resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:
- a negative pressure forming section for creating a negative pressure region in water having a lower pressure relative to a gaseous space;
 - a fluid guiding passage for directing a gas from the gaseous space to the negative pressure region; and
 - a detaching promotion section for forming a water flow having locally severe vortices.
10. A friction reducing ship according to claim 9, wherein the negative pressure forming section is comprised by a wing protruding into water from a submerged surface of the ship body; struts for supporting the wing; a flow guiding body disposed on a ship side of the wing.
11. A friction reducing ship according to claim 10, wherein the detaching promotion section is comprised by the said formed on a side of the ship body so as to have a \sqcap -shape, and the flow guiding body formed so as to follow a shape of the wing.
12. A friction reducing ship, that reduces frictional resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:
- a negative pressure forming section protruding from the submerged surface for creating a negative pressure region in a water relative to a gaseous space;
 - a discharge opening for ejecting the gas bubbles towards the negative pressure region in the water;
 - a fluid passage having one end open to the gaseous space and having other end open in the water by way of the discharge opening so as to direct a gas from the gaseous space into the water; wherein
 - the discharge opening is disposed on an inclined surface inclined at an angle to

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the submerged surface of the ship body.

13. A friction reducing ship according to claim 12, wherein the inclined surface is disposed in a depression provided on a submerged surface of a ship body to extend from an inner location to an outer location of the depression.

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Contd 14. A friction reducing ship, that reduces frictional resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:

a negative pressure forming section protruding from the submerged surface for creating a negative pressure region in a water relative to a gaseous space;

a discharge opening disposed in a rear of the negative pressure forming section for ejecting gas bubbles towards the negative pressure region in the water;

a fluid passage having one end open to the gaseous space and having other end open in the water by way of the discharge opening so as to direct a gas from the gaseous space into the water; and

a gas supply apparatus for supplying the gas towards the negative pressure region.

15. A method for reducing frictional resistance by ejecting gas bubbles on a submerged surface of a ship body by creating in a water a negative pressure region, having a pressure lower than the pressure in a gaseous space, resulting from the ship body cruising through a body of the water, and directing a gas from the gaseous space to the negative pressure region in the water so as to eject bubbles into the body of the water, and supplying the gas to the negative pressure region by using a specific apparatus.

16. A method for reducing frictional resistance by ejecting gas bubbles on a submerged surface of a ship body by creating in a water a negative pressure region, having a pressure lower than the pressure in a gaseous space, resulting from the ship

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Sub 03 and body cruising through a body of the water, and directing a gas from the gaseous space to the negative pressure region in the water, and generating a circulating flow of the water by using a wing to expand the negative pressure region.

17. A friction reducing ship, that reduces frictional resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:

a negative pressure forming section protruding from the submerged surface for creating a negative pressure region in a water relative to a gaseous space;

a discharge opening disposed in a rear of the negative pressure forming section for ejecting the gas bubbles towards the negative pressure region in the water;

a fluid passage having one end open to the gaseous space and having other end open in the water by way of the discharge opening so as to direct a gas from the gaseous space into the water; wherein

the negative pressure forming section is provided with a wing shaped component whose cross sectional shape is formed in a wing shape.

18. A friction reducing ship according to claim 17, wherein the wing shaped component is disposed so as to generate an uplifting force.

19. A friction reducing ship, that reduces frictional force by ejecting gas bubbles on a submerged surface of a ship body, comprising:

a discharge opening disposed on the submerged surface for ejecting the gas bubbles into a water;

a fluid passage having one end open to the gaseous space and having other end open in the water by way of the discharge opening so as to direct a gas from the gaseous space into the water; wherein

at least a portion of the fluid passage is comprised by component members to form outer shell of the ship body.

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20. A friction reducing ship according to claim 19, wherein at least a portion of the component member forming the fluid passage comprise a reinforcing component member of the ship body.

21. A friction reducing ship according to one of claim 19 or 20, wherein the fluid passage is divided into a plurality of passages.

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